Space Weather Forecast

Issued on Sunday 2 March 2025 at 12:28 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm G1 late Tuesday 04 March and into UTC midweek. Chance of Moderate-class X-ray flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low, with a peak high-end Common-class flare at 01/2301UTC from the southeastern solar horizon. This was possibly tied to a returning region in the vicinity, generating a Coronal Mass Ejection (CME) off the Sun-Earth line.

The solar disc now features up to eleven regions, with five new minor, unnumbered regions emerging, primarily in the east. Magnetically, most regions remain relatively simple; however, the three main active groups have undergone the most notable changes. A region in the northwest showed some slight enhancement to its intermediate spots. A region in the southwest saw development and consolidation amongst its leading spots, as well as some slight development to its trailing and intermediate spots. Finally a region in the centre disc showed little overall change but did see an emergence of a NEW group just to its north.

Solar Wind / Geomagnetic Activity: Solar winds are indicative of an ongoing connection to a strong but waning fast wind.

Solar wind speeds have been at strong levels but gradually waning. The number of particles was below average, and their associated magnetic field was at weak levels, with a fluctuating north-south component.

The net result of the above solar wind measures was Quiet to unsettled geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity carries a daily chance of becoming moderate, with isolated Moderate-class flares. This may rise slightly into the start of the new UTC week as sunspot regions return over the eastern solar horizon.

Solar Wind / Geomagnetic Activity: A CME from the 01/1730UTC 'filament eruption' from the southeast may affect Earth as a glancing blow around 04/1900UTC

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Otherwise, fast wind influence is expected to now wane, with strong winds gradually and erratically easing to background.

Geomagnetic activity is expected to be mostly Quiet to Unsettled (Kp1-3), with isolated active (Kp 4) intervals initially. This is until later on Day 3 (04 Mar) where the aforementioned CME brings a Chance of G1 (Kp5) to end this UTC day and on into midweek UTC, with a Slight Chance of G2 (Kp6).

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	20	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	50	50	50
Very Active	R3-R5 (X Class)	No	1	1	1	1

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	2	2	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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